DETAILED ACTION

1. This application is a 371 of PCT/JP04/04662 filed 3/31/2004. The preliminary amendment filed 9/28/2006 has been entered. Claims 3-6 and 8 were amended. Claims 1-9 are pending.

Claim Rejections - 35 USC § 102

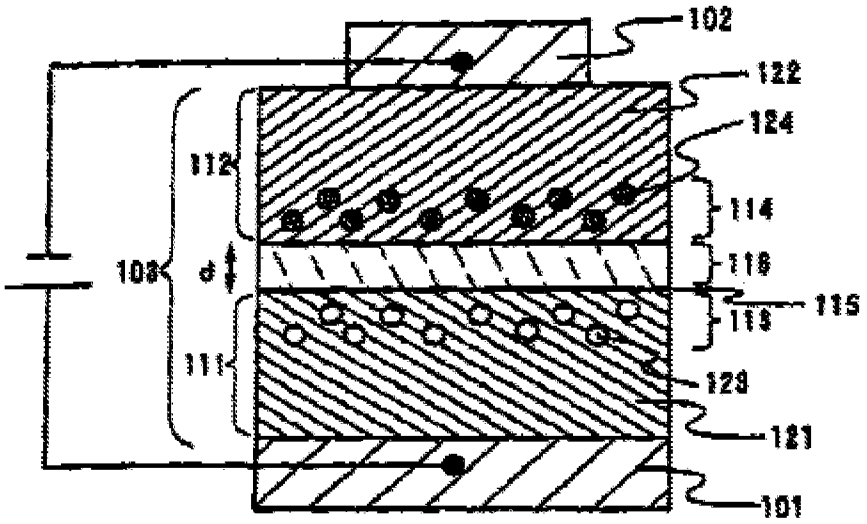
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 2, 5, 8, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (US 6,995,509).

Yamazaki et al. discloses the following organic EL device structure:

FIG. 1



In the above structure, 101 is an anode, 116 is a hole blocking layer, 102 is the cathode, 111 comprises a second dopant region (see col. 9, lines 10-13) and 112 comprises a first dopant region (see col. 9, lines 13-15) (see all of col. 9 through col. 10, lines 23). The first emission region has an emission wavelength between 400 nm and 500 nm, which includes blue color (see col. 10, lines 15-18 and col. 11, lines49-54) and the second emission region is reddish color having a peak in the region of 560 nm to 700 nm (see col. 10, lines 18-23). Regarding claim 5, Example 1 describes 7.5 weight percent of PtOEP in BAlq (see col. 12, lines 24-26). Regarding claim 8, a plurality of pixels is formed (see Example 4, col. 15, lines 16-59). Regarding claim 9, color filters are added to achieve a white light emitting device (see col. 17, lines 21-27).

Claim Rejections - 35 USC § 103

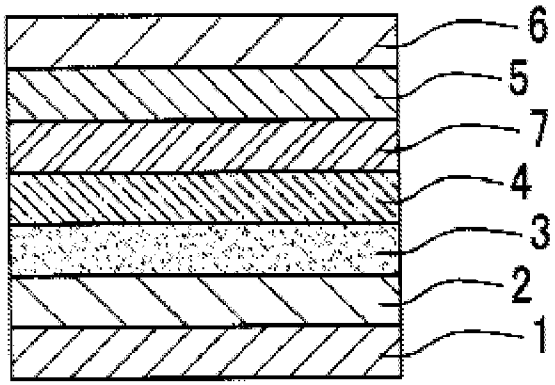
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toguchi et al. (US 6,565,993 B2).

Toguchi et al. discloses organic electroluminescent devices according to the following structure:

FIG. 1



In the above structure, 2 is the anode, 4 is an emission layer, 7 is an intermediate layer, 5 is an electron transporting layer and 6 is a cathode (see abstract). Any compound that is normally used as a light emitting material may be used for the emission layer (see col. 4, lines 9-13). Blue emitting material BDPVBi is specifically taught for the emission layer (see col. 4,

lines 16-17). The intermediate layer provides a hole blocking function (see col. 9, line 57 to col. 10, line 5). Preferred material includes bathocuproine (see Table 1, col. 10, lines 47-60). There is no particular limitation on the electron transporting material for the electron transporting layer and materials such as quinolinol metal complexes are suitable (see col. 8, lines 28-38 and claim 11). The electron transporting layer may also include a condensed polycyclic aromatic fluorescent material such as perylene (see col. 13, claims 13-14). Toguchi et al. does not appear to *exemplify* a device having a fluorescent material in the electron transporting layer with a wavelength longer than 555 nm; however, Toguchi et al. teaches both DCM compound and perylene are fluorescent materials to be used with a charge transporting material (see col. 5, lines 26-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected DCM in place of a fluorescent material such as perylene as a light emitting material to be mixed with the electron transporting material of the electron transporting layer, because one would expect the DCM to provide the function of light emission since DCM is also taught as a fluorescent material. [The examiner further notes the following: Where a claimed improvement of a device or apparatus is no more than "the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement," the claim is unpatentable under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)). Accordingly, applicant claims a combination that only unites old elements with no change in the respective functions of those old elements, and the combination of those elements yields predictable results; absent evidence that the modifications necessary to effect the combination of elements is uniquely challenging or difficult for one of ordinary skill in the art,

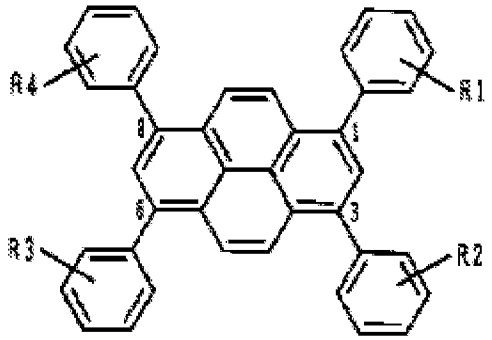
the claim is unpatentable as obvious under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d at 1518-19 (BPAI, 2007) (citing *KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396). Accordingly, since the applicant[s] have submitted no persuasive evidence that the combination of the above elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a) because it is no more than the predictable use of prior art elements according to their established functions resulting in the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement.]

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toguchi et al. (US 6,565,993 B2) in view of Toyama et al. (JP 2001-118682; cited by applicant on IDS, translation provided with this Office action). Toguchi et al. is relied upon as set forth above.

Toguchi et al. teaches any compound that is normally used as a light emitting material may be used for the emission layer (see col. 4, lines 9-13), but is silent with respect to teaching specifically the pyrene derivative of claim 6. Toyama et al. teaches, in analogous art, aryl derivatives of tetraphenylpyrenes for inclusion in a luminescent layer of an EL element (see abstract provided by applicant and formula [3] on 5th page of Japanese document).

【図３】

1,3,6,8-テトラフェニルピレン誘導体



It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected an aryl substituted pyrene derivative as taught by Toyama et al. for the Toguchi et al. device, because one would expect the pyrene derivatives to provide the function of light emission as required for the Toguchi et al. device.

Regarding claim 7, Toguchi et al. does not appear to *exemplify* a device having a fluorescent material in the electron transporting layer with a wavelength longer than 555 nm; however, Toguchi et al. teaches both DCM compound and perylene as fluorescent material to be used with a charge transporting material (see col. 5, lines 26-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected DCM in place of a fluorescent material such as perylene as a light emitting material to be mixed with the electron transporting material of the electron transporting layer, because one would expect the DCM to provide the function of light emission since DCM is taught as a fluorescent material.

7. Claims 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toguchi et al. (US 6,565,993 B2) in view of Yamazaki et al. (US 6,995,509). Toguchi et al. is relied upon as set forth above for the rejection of claim 1.

Regarding claim 5, Toguchi et al. discloses EL elements that may comprise a fluorescent material with the electron transporting material, but does not expressly teach a dopant concentration. Yamazaki et al. teaches in analogous art that suitable light emitting dopant concentrations for a light emitting material in a layer include 99:1 host to dopant or 7.5 weight percent (see col. 12, lines 11-14 and col. 12, lines 24-27). It would have been obvious to one of ordinary skill in the art at the time of the invention to have included dopant in the Toguchi et al. electron transporting layer in an amount of less than 50% vol., because one would expect to achieve light emission with a dopant amount of less than 50% vol. for the device.

Regarding claim 8, Toguchi et al. is silent with respect to specifically mentioning the devices are used together to form a display. Yamazaki et al. teaches in analogous art the formation of a display using a combination of multiple pixel portions (see Example 4, col. 15, lines 16-59). It would have been obvious to one of ordinary skill in the art to have formed a display incorporating EL devices according to Toguchi et al. in combination , because one would expect to achieve a display of light emission from the devices.

Regarding claim 9, Toguchi et al. fails to mention specifically the use of color filters with the devices. Yamazaki et al. teaches in analogous art color filters are added to achieve a white light emitting device (see col. 17, lines 21-27). It would have been obvious to one of ordinary skill in the art to have combined color filters with the Toguchi et al. devices, because one would expect to achieve any desired color output from the device with the use of color filters.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toguchi et al. (US 6,565,993 B2) in view of Epstein et al. (US 6,872,471). Toguchi et al. is relied upon as set forth above for the rejection of claim 1.

Toguchi et al. teaches there is no particular limitation on the electron transporting material for the electron transporting layer (see col. 8, lines 28-38), but fails to mention specifically the incorporation of an infrared emission material in the electron transporting layer. Epstein et al. teach in analogous art at least one electron transporting material having a peak emission within the infrared spectrum may be incorporated into a device to achieve an improved device (see col. 2, lines 61-66 and lines 14-21). It would have been obvious to one of ordinary skill in the art to have incorporated an infrared emitting compound in the Toguchi et al. device, because Epstein et al. teaches such compounds may be used in an electron transporting layer and Toguchi et al. clearly teaches *any* electron transporting material may be utilized in the device. One would expect to achieve a functional light emitting device within the disclosure of Toguchi et al.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/
Primary Examiner, Art Unit 1786

April 9, 2010